

Joint Pub 4-03



Joint Bulk Petroleum Doctrine

Reproduced From
Best Available Copy



19950721084613



25 July 1995

PREFACE

1. Scope

This publication sets forth principles and establishes doctrine for bulk petroleum support of US military operations. This publication will aid combatant commanders in both planning and training for joint operations. It will also serve to focus training of personnel involved in bulk petroleum operations and provide the Services guidance for organizing, training, and equipping forces that provide bulk petroleum support.

2. Purpose

This publication has been prepared under the direction of the Chairman of the Joint Chiefs of Staff. It sets forth doctrine and selected joint tactics, techniques, and procedures (JTTP) to govern the joint activities and performance of the Armed Forces of the United States in joint operations as well as the doctrinal basis for US military involvement in multinational and interagency operations. It provides military guidance for the exercise of authority by combatant commanders and other joint force commanders and prescribes doctrine and selected tactics, techniques, and procedures for joint operations and training. It provides military guidance for use by the Armed Forces in preparing their appropriate plans. It is not the intent of this publication to restrict the authority of the joint force commander (JFC) from organizing the force and executing the mission in a manner the JFC deems most appropriate to ensure unity of effort in the accomplishment of the overall mission.

3. Application

a. Doctrine and selected tactics, techniques, and procedures and guidance established in this publication apply to the commanders of combatant commands, subunified commands, joint task forces, and subordinate components of these commands. These principles and guidance also may apply when significant forces of one Service are attached to forces of another Service or when significant forces of one Service support forces of another Service.

b. The guidance in this publication is authoritative; as such, this doctrine (or JTTP) will be followed except when, in the judgment of the commander, exceptional circumstances dictate otherwise. If conflicts arise between the contents of this publication and the contents of Service publications, this publication will take precedence for the activities of joint forces unless the Chairman of the Joint Chiefs of Staff, normally in coordination with the other members of the Joint Chiefs of Staff, has provided more current and specific guidance. Commanders of forces operating as part of a multinational (alliance or coalition) military command should follow multinational doctrine and guidance ratified by the United States. For doctrine and procedures not ratified by the United States, commanders should evaluate and follow the multinational command's doctrine and procedures, where applicable.

For the Chairman of the Joint Chiefs of Staff:



WALTER KROSS
Lieutenant General, USAF
Director, Joint Staff

Preface

Intentionally Blank

TABLE OF CONTENTS

	PAGE
EXECUTIVE SUMMARY	v
CHAPTER I	
PRINCIPLES OF BULK PETROLEUM LOGISTICS	
• General	I-1
• Basic Concepts of Joint Bulk Petroleum Operations	I-1
• Principles	I-1
• Stockage	I-2
• Major Participants	I-2
• Theater Support Concepts	I-3
• Integrated Materiel Management (IMM)	I-10
• Planning for Bulk Petroleum Support	I-11
• Host-Nation Support	I-13
CHAPTER II	
RESPONSIBILITIES	
• General	II-1
• OSD	II-1
• Chairman of the Joint Chiefs of Staff	II-1
• Geographic Combatant Commanders	II-1
• Commander in Chief, US Transportation Command (USCINCTRANS)	II-3
• Defense Logistics Agency and Defense Fuel Supply Center	II-3
• Services	II-3
• Service-Specific Responsibilities	II-4
CHAPTER III	
PETROLEUM STOCKAGE MANAGEMENT	
• General	III-1
• War Reserve Requirements and Stocks	III-1
• Primary Operating Stocks	III-2
• Inventory Management Plan	III-2
• Emergency Allocations of Petroleum	III-3
• CJCS Petroleum Reporting Requirements	III-3
• Bulk Petroleum Facilities Report	III-3
APPENDIX	
A References	A-1
B Administrative Instructions	B-1

Table of Contents

GLOSSARY

Part I Abbreviations and Acronyms	GL-1
Part II Terms and Definitions	GL-3

FIGURE

I-1 Principles of Bulk Petroleum Operations	I-2
I-2 Bulk Petroleum Distribution System in a Developed Theater	I-4
I-3 Initial Petroleum Distribution System in an Undeveloped Theater	I-7
I-4 Military Operations Other Than War Fuel Support Fundamentals	I-10
I-5 Planning Considerations	I-11
II-1 Key Petroleum Responsibilities of the Geographic Combatant Commanders	II-2
II-2 Petroleum Responsibilities of the Services	II-4
III-1 Factors for Computing the Primary Operating Stocks	III-2

EXECUTIVE SUMMARY

COMMANDER'S OVERVIEW

- **Discusses Bulk Petroleum Concepts and Principles**
- **Outlines Theater Support Concepts**
- **Explains the Concept of Integrated Materiel Management**
- **Describes Planning for Bulk Petroleum Support**
- **Discusses Host-Nation Support**
- **Outlines Responsibilities at Each Level of Authority**
- **Describes Petroleum Stockage Management**

Basic Concepts and Principles

Providing forces with the right fuel, in the right place, and at the right time, is the essence of petroleum logistics.

Although **bulk petroleum** is a common item of support, it presents a significant logistic challenge in its movement, storage, and distribution that must be met for sustaining joint operations. **Bulk petroleum logistic tasks vary** depending on whether the theater is developed or undeveloped and whether force employment is single-Service, joint, or multinational. However, basic bulk petroleum doctrinal concepts remain essentially unchanged. Any viable bulk petroleum support concept must incorporate the principles of **standardization, flexibility, and interoperability**.

Bulk petroleum requires special handling and storage and has a demand significantly larger than other supply classes.

Bulk petroleum inventory consists of **war reserve materiel stocks** and **primary operating stocks**. Both inventories are sized based on a concept of having enough fuel on hand until resupply can be assured. This approach **minimizes stock levels while maintaining an acceptable degree of support and sustainability** across the range of military operations.

The geographic combatant commander has the predominant fuels responsibility within a theater, and this responsibility is discharged by the **Joint Petroleum Office (JPO)**. The JPO works in conjunction with its Service components and the **Defense Fuel Supply Center (DFSC)**

Executive Summary

to plan, coordinate, and oversee all phases of bulk petroleum support for US forces employed or planned for possible employment in the theater.

Theater Support Concepts

Theater bulk petroleum operations revolve around a push-pull supply system.

Land-based customers (e.g., Service units and bases) request fuel from direct support organizations of the Army component or other Service component assigned as the dominant user. At the same time, these organizations schedule movement of product forward from the corps support area based on a combination of available storage and anticipated customer demands. **Sea-based customers** essentially perform the same functions, but interface more directly with terminal operators at Defense Fuel Support Points. **The basic stockage concept in theater operations is to have sufficient storage to support the most demanding operation**, and keep that storage as full as possible, while using available transportation assets as efficiently as possible.

Elements that comprise the fuel support spectrum between the developed and undeveloped theaters can be tailored and applied to military operations other than war.

In a developed theater, the established infrastructure supports the supply and distribution of bulk petroleum. Stocks are moved from secure military or commercial sources to forward areas and terminals as demand or plans require. Pipeline is the preferred method of inland fuel distribution and may be supplemented by other means of bulk delivery. **In an undeveloped theater**, many support assets are not available. Bulk petroleum may need to be received via joint logistic over-the-shore operations. As theater requirements expand, distribution system assets may be installed depending on the volume of requirements, the expected duration of the employment, and the type of operation (e.g., humanitarian assistance or peacekeeping). **Military operations other than war** require mobility, rapid response, and tight control over fuel assets and inventories. These fuel requirements will vary, and each situation will be unique.

Integrated Materiel Management

The concept of Integrated Materiel Management underlies the principles in Joint Bulk Petroleum Doctrine.

The **Defense Logistics Agency** (DLA) is the integrated materiel manager for bulk petroleum. The DFSC is DLA's designated agent to carry out these responsibilities. DFSC is responsible for the coordinated procurement, storage, and distribution of bulk petroleum products to the Services as well as ownership of fuel in bulk storage and funding responsibilities on Services' installations. To facilitate practical and responsible decisions that ensured expeditious delivery of fuel products to each Service, DFSC established area **Defense Fuel Regions**

Executive Summary

(DFRs). These DFRs maintain close contact with customers to ensure their particular needs are considered when planning fuel support. In general, DFRs coordinate delivery orders with industry, resolve logistic problems, supply emergency products, and ensure customers have a continuous and reliable source of fuel.

Planning for Bulk Petroleum Support

The petroleum supply system must be designed for the operations and climate of the specific theater.

The supported geographic combatant commander's **Joint Petroleum Office** is responsible for the overall planning of petroleum logistic support for joint operations within their area of responsibility. The **subarea petroleum office** is responsible for petroleum, oil, and lubricants planning and execution matters within their joint operations area. This level of planning focuses on support for each Service component and produces the **inland petroleum distribution plan** and **base support plans**.

Strategic, operational, and tactical plans should consider at least the following: the mission, Joint Strategic Capabilities Plan, fuel requirements, infrastructure, equipment, support units, interoperability of fuel transfer systems, sustainability and survivability, and commercial support.

Host-Nation Support

Geographic combatant commanders should make maximum use of host-nation capabilities to meet peacetime and wartime requirements.

Host-nation support is especially critical in contingencies when logistic support from US units or equipment may not be readily available or combat forces have outpaced integral logistics capability. The type and amount of fuels support provided should, if possible, be specified in **signed agreements** and **included in logistic plans** of all nations concerned. The amount of support, civil or military, a host nation can provide depends on its national laws, industrial capability, and willingness to give such support.

Responsibilities

Bulk petroleum management responsibilities are assigned to the Department of Defense, Joint Staff, combatant commands, Defense agencies, and Services.

Each level of authority has specific responsibilities to ensure bulk petroleum support is efficiently and effectively provided to US military forces across the range of military operations. The **Deputy Under Secretary of Defense for Acquisition and Technology** (DUSD(A&T)) is responsible for establishing policies for management of bulk petroleum stocks and facilities and providing guidance to other Department of Defense (DOD) agencies, the Joint Staff, and Services. The **Deputy Under Secretary of Defense for Logistics** will serve as the central

Executive Summary

administrator for energy management and integrated materiel management oversight responsibility for fuel products. The **Under Secretary of Defense** (Comptroller), in coordination with DUSD(A&T), is responsible for establishing financial policies and guidance for management of bulk petroleum products. The **Chairman of the Joint Chiefs of Staff** is primarily focused on wartime support and coordinates with the Department of Defense, Services, and the combatant commands to resolve petroleum issues. The **Director for Logistics (J-4), Joint Staff**, is the primary agent of the Chairman of the Joint Chiefs of Staff for all bulk petroleum matters. The **geographic combatant commanders** are responsible to ensure fuel support is provided to combat forces to accomplish those missions assigned by the National Command Authorities. The bulk petroleum mission of the **Commander in Chief, US Transportation Command**, is to plan for and provide air, land, and sea transportation of fuels for the DOD across the range of military operations. The **Director, Defense Logistics Agency**, is responsible for meeting the petroleum support requirements of the combatant commands and Services. These functional responsibilities have been delegated to the **Commander, Defense Fuel Supply Center**, and include procurement, ownership, quality surveillance, accountability, budgeting, and distribution of bulk petroleum stocks to the point-of-sale. To perform the petroleum support mission, each **Service** provides a variety of functions in addition to Service-specific responsibilities.

Petroleum Stockage Management

The overall intent of stockage management is to maintain minimal inventories of specific products at each location to safely support operational requirements.

DOD bulk petroleum inventories consist of **war reserve materiel stocks** and **primary operating stocks**. These two categories of inventory guide sizing of the stock levels to supply fuel to permit immediate and short-term operations across the range of military operations. Their purpose is to sustain such operations until resupply can occur. A worldwide **inventory management plan (IMP)** is developed and issued annually by DFSC in coordination with the Services and unified commands. The IMP identifies the required inventory levels and the amount of fuel by location that is stocked to cover those requirements. **There are various levels of responsibility that govern the allocation of fuel during a national emergency.** These responsibilities are dependent on the theater and worldwide commercial environment.

There are two key joint petroleum reports that are submitted annually or more frequently at the direction of the Chairman of the Joint Chiefs of Staff. These two reports, called the **Bulk**

Executive Summary

Petroleum Contingency Report and **Bulk Petroleum Capabilities Report** are submitted by the geographic combatant commanders' JPOs. In addition, the **Bulk Petroleum Facilities Report** documents tankage data and receiving and shipping capability. The information is forwarded by the DOD components to the DFSC for compilation.

CONCLUSION

This publication sets forth principles and establishes doctrine for bulk petroleum support of US military operations. This publication will aid combatant commanders in both planning and training for joint operations. It will also serve to focus training of personnel involved in bulk petroleum operations and provide the Services guidance for organizing, training, and equipping forces that provide bulk petroleum support.

Executive Summary

Intentionally Blank

CHAPTER I

PRINCIPLES OF BULK PETROLEUM LOGISTICS

"It is very necessary to attend to all this detail and to trace a biscuit from Lisbon into a man's mouth on the frontier and to provide for its removal from place to place by land or by water, or no military operations can be carried out."

**Attributed to the Duke of Wellington
Peninsular Campaign, 1811**

1. General

a. Although bulk petroleum is a common item of support, it presents a significant logistic challenge in its movement, storage, and distribution that must be met for sustaining joint operations. **Providing forces with the right fuel, in the right place, and at the right time, is the essence of petroleum logistics.** It involves determining peacetime and wartime requirements, contracting and allocating product, arranging for bulk storage, moving products forward to and within the theater, ensuring quality control, issuing and accounting for the fuel, and maintaining distribution equipment and facilities.

b. **Joint bulk petroleum doctrine provides the framework for fuels support across the range of military operations.** Together with petroleum policy, the doctrine guides development of procedures for various types of fuels operations. Petroleum doctrine is a subset of logistics doctrine and, therefore, possesses all the innate principles associated with logically supporting joint operations. However, **petroleum doctrine focuses on a single demanding commodity with Service commonality, commercial application, and worldwide usage.** It is this focused perspective that supports the application of specific bulk petroleum concepts.

2. Basic Concepts of Joint Bulk Petroleum Operations

Bulk petroleum logistics has been a joint operation for over two decades with the **Military Services developing complementary tactical distribution systems and the Defense Logistics Agency (DLA) providing products to the combatant commands and Services.** Bulk petroleum logistics tasks vary depending on whether the theater is developed or undeveloped and whether force employment is single-Service, joint, or multinational. However, basic bulk petroleum doctrinal concepts, as listed below, remain essentially unchanged.

3. Principles

Bulk petroleum is common to both commercial and military operations. It requires special handling and storage and has a demand significantly larger than other supply classes. For these reasons, **any viable support concept must incorporate the principles of standardization, flexibility, and interoperability.** See Figure I-1.

a. **Standardization.** The Department of Defense (DOD) components should **minimize the number of bulk petroleum products that must be stocked and distributed, plan**

Chapter I

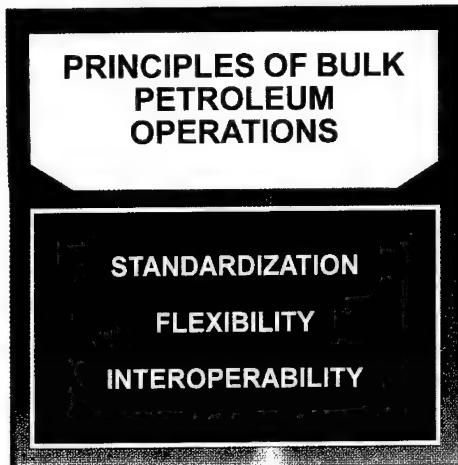


Figure I-1. Principles of Bulk Petroleum Operations

be designated as lead for petroleum logistics. Consequently, to foster interoperability, DOD fuels handling equipment should be of common or compatible design, material, and size whenever practical.

4. Stockage

Bulk petroleum inventory consists of war reserve materiel stocks (WRMS) and primary operating stocks (POS). Both inventories are sized based on a concept of having enough fuel on hand until resupply can be assured. This approach minimizes stock levels while maintaining an acceptable degree of support and sustainability across the range of military operations. Inventory levels are independently determined for each location or, where practical, for a defined area. Chapter III, "Petroleum Stockage Management," will provide additional information on how fuel requirements are determined.

5. Major Participants

a. The geographic combatant commander has the predominant fuels responsibility within a theater, and this responsibility is discharged by the Joint Petroleum Office (JPO). The JPO works in conjunction with its Service components and the Defense Fuel Supply Center (DFSC) to plan, coordinate, and oversee all phases of bulk petroleum support for US forces employed or planned for possible employment in the theater.

b. DFSC, a field activity of DLA, is the integrated materiel manager for bulk petroleum. As such, DFSC is responsible for the acquisition of bulk petroleum products and providing product support to the geographic combatant commands and Military Services as outlined in Chapter II, "Responsibilities."

c. Each Service provides for product handling at its operational locations. The

to use fuels readily available worldwide, and minimize the military-unique characteristics of DOD fuels. The determination of required fuel is dependent upon the types of equipment deployed and must also take into account the maturity of the theater's petroleum production and distribution infrastructure.

b. Flexibility. Military weapon systems and equipment must be capable of using alternate fuels. Land-based aircraft and equipment deployed to a theater must be capable of sustaining acceptable performance using a kerosene-based product such as a JP-8 type fuel. Corresponding sea-based aircraft and equipment must perform acceptably on JP-5 type fuel. Conventionally powered ships, whenever possible, should use a distillate fuel such as F-76 for propulsion.

c. Interoperability. Military fuels handling equipment and connectors must be interoperable among Services and, where possible, with allies and coalition partners. This interoperability allows timely weapon system support in joint operations without duplication of effort and material. This concept is also extremely important in combined operations where one nation may

Principles of Bulk Petroleum Logistics

Services coordinate all fuels issues with the appropriate JPO and DFSC during single-Service, joint, and multinational operations to ensure efficiency and avoid duplication of effort. In some cases, the Services provide for the distribution of bulk petroleum as outlined in Chapter II, "Responsibilities."

"It is impossible to measure the results of fueling aircraft, ships, or armored vehicles safely. No one can count the fires that never started or the engine failures that never took place. And no one can neither evaluate the lives that are not lost, nor plumb the depths of the human misery we have spared. But the men and women with the fueling hose can find lasting satisfaction in the knowledge they have worked wisely and well, and that safety has been their first consideration."

Fuels Management Ode
(Author unknown)

6. Theater Support Concepts

a. **General.** Theater bulk petroleum operations revolve around a push-pull supply system. **Land-based customers** (Service units, bases, and other types) request

fuel from direct support organizations of the Army component or other Service component assigned as the dominant user. At the same time, these organizations schedule movement of product forward from the corps support area based on a combination of available storage and anticipated customer demands. **Sea-based customers** essentially perform the same functions, but interface more directly with terminal operators at Defense Fuel Support Points. **The basic stockage concept in theater operations is to have sufficient storage to support the most demanding operation**, and keep that storage as full as possible, while using available transportation assets as efficiently as possible. **During peacetime operations, this stockage concept may be modified** by actual day-to-day needs, economic resupply concepts, threat conditions, and storage objectives. However, if tankage is really no longer required, it usually is inactivated. The theater level JPO or Subarea Petroleum Office (SAPO) slates additional products into the theater or joint operations area (JOA) through the DFSC. **When demand exceeds availability, the JPO devises an allocation system** to support the campaign or operation plan that is approved by the geographic combatant commander.



USS Camden AOE-2 carries enough fuel to go around the world about four times. Most of the fuel is destined to replenish other ships via underway refueling operations

Chapter I

b. Developed Theater. In a developed theater, the established infrastructure supports the supply and distribution of bulk petroleum. Stocks are moved from secure military or commercial sources to forward areas and terminals as demand or plans require. The movement and redistribution of assets are accomplished through a joint effort involving the combatant commands, Service components, and DFSC. DFSC interfaces with components of the US Transportation Command for product movement outside the area of operations (AO) as necessary. Actual procedures to accomplish the delivery of products to the end user depend on the sources of product and the conditions in the AO. The developed theater normally has available some host-nation support (HNS) assets (i.e., fuel sources, terminal facilities, pipelines,

railways, trucks) that should be used to the maximum extent possible to help offset US requirements. Because the capabilities of allies or coalition partners are theater unique, the JPO is responsible for assessing these potential capabilities and integrating them into appropriate plans and operations. Figure I-2 is an example of a bulk petroleum distribution system in a developed theater.

- **Pipeline Distribution.** Pipeline is the preferred method of inland fuel distribution. A fully developed theater fuel distribution system includes ship discharge ports (with moorings and piping manifolds), seaside and inland tank farms, pump stations, and pipelines. Large-scale combat operations may justify the construction of coupled

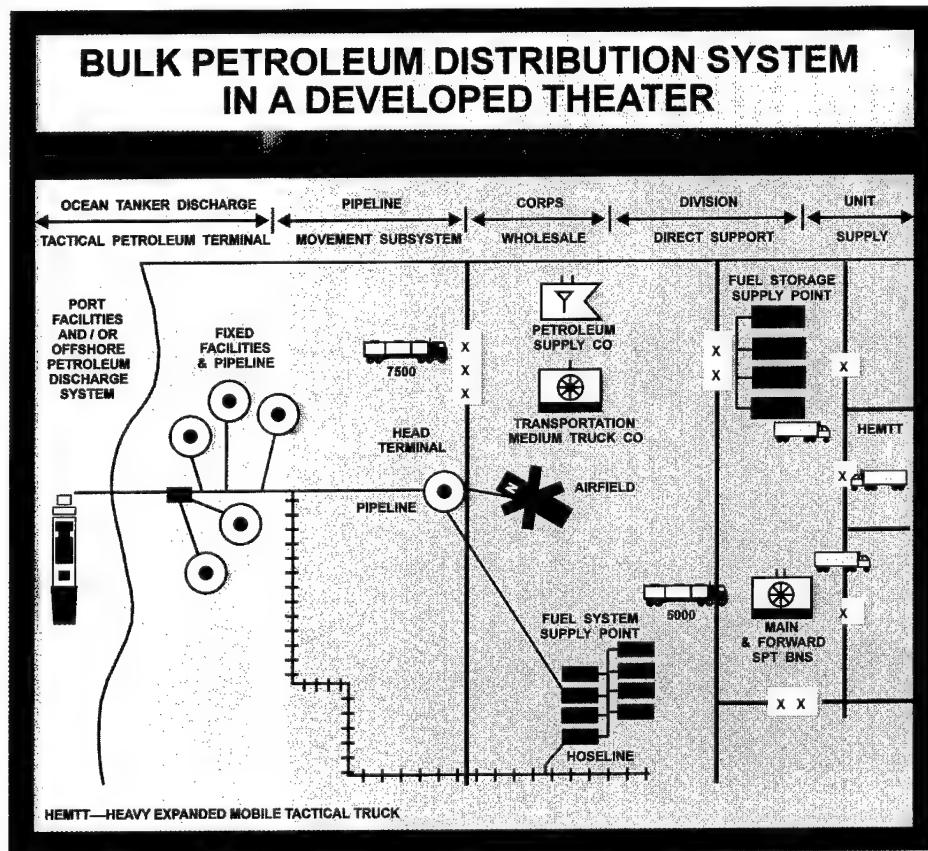


Figure I-2. Bulk Petroleum Distribution System in a Developed Theater

Principles of Bulk Petroleum Logistics

pipelines using the Army's Inland Petroleum Distribution System (IPDS) to move bulk petroleum from rear area storage locations forward to the combat zone. These lines may supplement existing Service or host-nation infrastructure

commonly move fuel from terminals or corps area storage to the Service component direct support unit (i.e. non-divisional supply units for the Army, bulk fuels companies for the Marines, base fuels flights for the Air Force, and naval



Hot pit refueling an F-16 aircraft.

pipelines. Air bases and Service beddown sites are also serviced by pipeline systems when tactically feasible. Hoselines may be used to service smaller or temporary, large volume sites. The pipeline system extends as far forward as possible, usually into the designated corps rear area, with hoseline extensions into corps storage sites.

- **Other Distribution.** The pipeline system may be supplemented by other means of bulk delivery, such as barges, rail tank cars, aircraft, bulk truck transports, and commercial distribution equipment provided by the host or occupied nation. These distribution systems are used to move products from the rear or intermediate areas to the multi-Service direct support echelons. Bulk truck transports

construction force units for the Navy). Some local distribution is also made by tank trucks that are organic to these direct support units.

c. **Undeveloped Theater.** In an undeveloped theater, in-place and operational tankage, on-hand product, road nets, rail lines, and easily traversed lines of communications normally are not available. **Bulk petroleum may need to be received via joint logistics over-the-shore (JLOTS) operations.** Such operations use various combinations of the offshore petroleum discharge system (OPDS), maritime prepositioned ships (MPS), amphibious assault bulk fuel system (AABFS) and IPDS. The OPDS, MPS, or AABFS deliver fuel to tactical storage located immediately ashore and operated by a Marine Corps bulk fuel company, Army pipeline and terminal operating unit, or Army petroleum

Chapter I



The Offshore Petroleum Discharge System (USS Chesapeake, full view shown in lower picture) lists while launching the Single Anchor Leg Moor during OCEAN VENTURE 92.

supply unit. Figure I-3 is an example of an initial petroleum distribution system in an undeveloped theater.

- **General.** In the early stages, the theater infrastructure may only consist of a JOA, Marine air-ground task force, or Army division support area. The rear area

communications zone, including tactical air bases, may never be formed depending on the duration and geographic expansion of the operation. As in the developed theater, direct support units may provide fuel on an area basis to some or all allied forces comprising a combined task force.

Principles of Bulk Petroleum Logistics

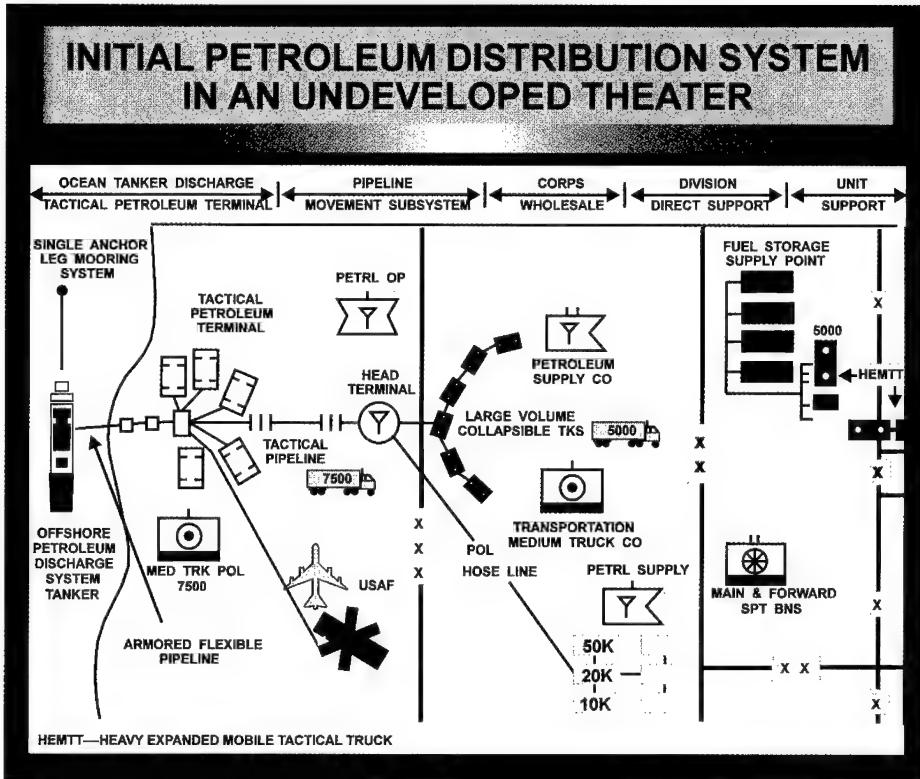


Figure I-3. Initial Petroleum Distribution System In an Undeveloped Theater

- **Austere Location.** When lines of communications are not secure, or when support of isolated areas of operations demand such, **Service component** aircraft carrying fuel trucks, bladders, collapsible tanks, 500-gallon collapsible drums, or 55-gallon drums may be used. The aerial bulk fuel delivery system enables cargo aircraft to transport from 3,000 to 24,000 gallons of fuel to the tactical storage and issue systems. **Delivery amounts vary based on aircraft type, configuration, and runway capability.** The tactical fuel distribution systems typically are air transportable and consist of bladders, hoses, filters, and pumps. In addition, Air Force tanker aircraft can deliver fuel to air base tactical systems, again depending on runway capability and the threat. **Transporting fuel by air greatly limits the airlift available for other**

requirements and is only used when other delivery means cannot meet operational needs.

- **Pipeline Distribution.** As in the developed theater, bulk petroleum is most efficiently moved from base terminals and rear storage locations to the combat zone by pipelines. Coupled pipelines, as a part of IPDS, are used when and if the beachhead is expanded. A tactical tank farm consisting of portable bladders is constructed at air bases or other locations and connected to the main hoseline or pipeline. The air bases or other locations then employ tactical servicing systems that have hoses, pumps, and filters to issue the product to the end user. These tactical issuing locations must also have the capability to test the fuel to ensure quality is maintained.

Chapter I

W.W.II: SOLVING FUEL PROBLEMS

Mobile warfare placed a premium on the adequate supply of petroleum products to mechanized armies in the field. This was a trend that began in World War I and developed into the "blitzkrieg" tactics of World War II. The mobility of armies was always a fundamental factor in military strategy and tactics, but modern equipment provided greater fluidity of action than was ever possible in any previous military campaign. Tanks, trucks, jeeps, and tractors, however, required a steady flow of gasoline. The degree of an army's success in the field was in direct proportion to the adequacy of its petroleum supply. In February 1943, when the 8th Army had just arrived in Tripoli in pursuit of the retreating Germans, Maj. Gen. Edmund B. Gregory, The Quartermaster General, visited General Sir Bernard L. Montgomery. He learned that petroleum supply had been the main problem of the British throughout the North African campaign. Lt. Gen. Neil M. Ritchie, who had been driven back almost to the gates of Cairo, had been defeated because he had disregarded the advice of his supply man, who had warned him that there was not enough transportation to bring up an adequate supply of gasoline to serve the tanks. The latter, their supply of gasoline exhausted, became easy prey for the Germans. In modern war, a country deprived of its oil supply is doomed to defeat.

The Quartermaster Corps realized at the outset of the war that furnishing oil to the troops would be a major function, but it did not fully appreciate the extent and nature of the problem until preparations for the North African campaign were under way. Then, by mid-1942, the War Department found that it was involved in a new and tremendous business. Petroleum constituted approximately two-thirds of the total tonnage of shipments from the United States to the North African Theater. For the first time in history, it was necessary for the QMC to arrange for the supply of gasoline, diesel fuels, and kerosene in the hundreds of thousands of 55-gallon drums and 5-gallon cans required by the theater commander to keep supply lines moving over hundreds of miles and to support operations for which there were no storage tanks, gasoline pumps, or local warehouses available. The problem of containers and equipment for handling petroleum products became vital. At the beginning of the North African campaign, the British had used so-called "flimsies," that is, ordinary 5-gallon tin gasoline containers. As the name implied, "flimsies" could not take the rough handling to which they were subjected, and consequently at least half of the British supply had been wasted. It was not until after the capture of a substantial number of 55-gallon drums and Jerry cans from the Germans that their gasoline problem was somewhat simplified. The procurement of suitable containers was a problem that also had to be solved by the Office of The Quartermaster General.

Demands for petroleum products and containers increased enormously as the war progressed, and the coordination and centralization of their procurement, storage, and distribution became imperative in the face of transportation difficulties and shortages of critical items. The War Department had little or no petroleum organization before the war. The Army had depended upon the distribution facilities of the petroleum industry to satisfy its needs in the zone of interior. Maneuvers had created increased demands at different

Principles of Bulk Petroleum Logistics

times, but the Army had always found it possible to meet requirements by means of Treasury Procurement contracts and some special arrangements by field commanders, with very little coordination from Washington.

The entrance of the United States into the war brought huge requisitions which could not be filled by such means. Kaleidoscopic changes were initiated in an effort to evolve an adequate organization for handling petroleum supply. The need for centralization was apparent, and the first step in that direction was the creation of the Petroleum Branch in the Procurement Division, OQMG. Col. H.E. Rounds, the Chief of the Branch, had the task of building an organization from scratch. So well did he succeed, that ultimately, on 1 June 1943, it evolved into the Fuels and Lubricants Division, an organization which completed the integration of the supply of petroleum products for the Army. The Division was given not only staff responsibilities, particularly in relation to long-range planning, but also operating responsibilities covering the procurement, supply, issue, and storage of petroleum products, containers, and equipment for handling petroleum products. Despite the difficulties inherent in creating an adequate petroleum organization during the war, the QMC accomplished the task of procuring petroleum supplies, delivering them to the right place at the right time, and insuring that, with some few exceptions, they were of the right specifications needed for extreme variations of climate and widely different items of equipment. This was a remarkable achievement.

SOURCE: Risch, Erna, QMC Historical Studies #9: Fuels for Global Conflict, Historical Section, Office of the Quartermaster General, 1952 .

- **Expanding Distribution.** As theater requirements expand, rigid tactical pipelines, tanks, and fixed pumping assemblies may be installed depending on the volume of requirements, the expected duration of the employment, and the type of operation (e.g., humanitarian assistance or peacekeeping.). Other delivery means, operated either by military or commercial sources, such as tank trucks, barges, and aircraft may be incorporated into the overall distribution system depending on road, river, or airport infrastructure.
- **d. Military Operations Other Than War (MOOTW).** The focus shift from global to highly diverse regional conflicts demands responsive petroleum support. MOOTW requires mobility, rapid response, and tight control over fuel assets and inventories. These fuel requirements will vary and each situation will be unique. Elements that comprise the fuel support spectrum between the developed and undeveloped theaters can be tailored and applied to MOOTW. Emerging **fundamentals for MOOTW fuel support** are shown in Figure I-4.

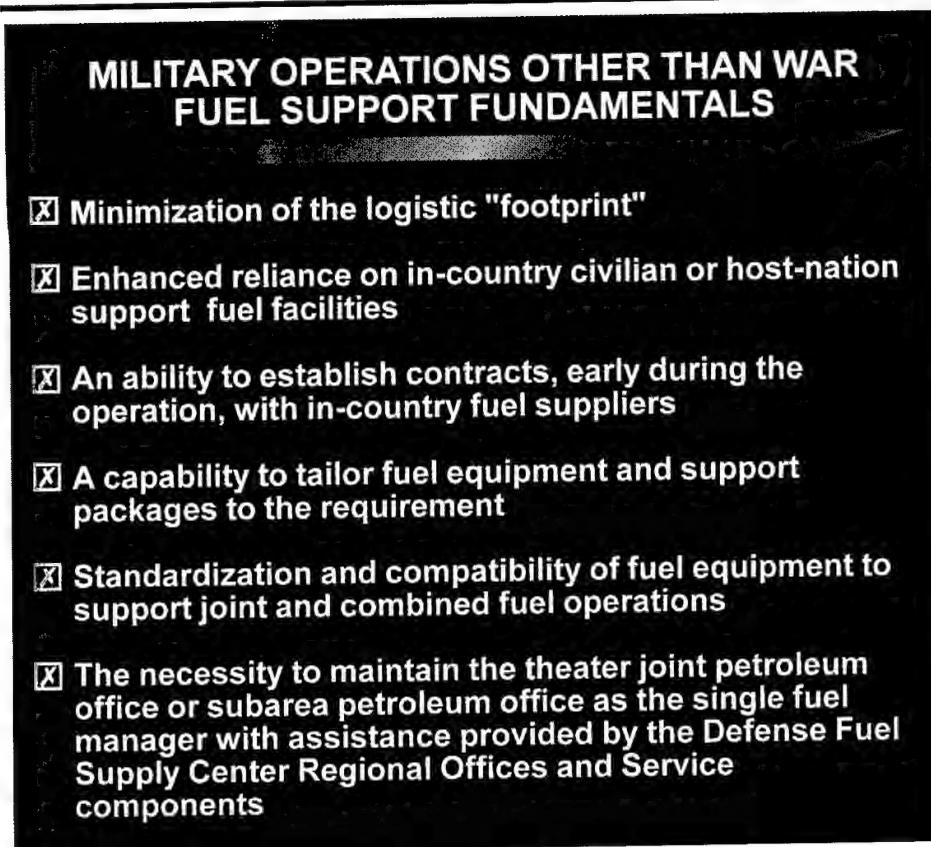


Figure I-4. Military Operations Other Than War Fuel Support Fundamentals

7. Integrated Materiel Management (IMM)

a. General. The concept of IMM underlies the principles in Joint Bulk Petroleum Doctrine. Because IMM both supports and influences this doctrine's usage and interpretation, an understanding of its conception and extent is important.

b. Overview. In 1972, the Office of the Secretary of Defense (OSD) designated DLA as the integrated materiel manager for bulk petroleum. DLA designated DFSC as its agent to carry out these responsibilities. In 1973, DFSC became responsible for the coordinated procurement, storage, and distribution of bulk petroleum products to the Services' installation boundaries. In 1981, DFSC was given responsibility to fund

military construction for certain bulk storage facilities, and in 1985, to fund maintenance and repair for these storage facilities. Finally, DFSC responsibilities greatly expanded in 1992 to include ownership of fuel in bulk storage and funding responsibilities on Services installations to achieve more vertical integration of product management down to the point of sale to the customer.

c. Defense Fuel Regions (DFRs). To facilitate practical and responsible decisions that ensured expeditious delivery of fuel products to each Service, DFSC established area DFRs. These DFRs maintain close contact with customers to ensure their particular needs are considered when planning fuel support. In general, DFRs coordinate delivery orders with industry, resolve logistic problems, supply emergency

Principles of Bulk Petroleum Logistics

products, and ensure customers have a continuous and reliable source of fuel. DFRs are located in the continental United States, the US Pacific Command, the US European Command, and the US Central Command. DFR-Pacific, DFR-Europe, and DFR-Middle East support the respective geographic combatant commanders.

8. Planning for Bulk Petroleum Support

a. Overall Theater Planning

- **General.** The supported geographic combatant commander's JPO is responsible for the overall planning of petroleum logistic support for joint operations within their area of responsibility (AOR). This planning occurs at the strategic level and usually is embodied in the petroleum appendix to the logistics annex of the Major Regional Contingency/Lesser Regional Contingency (MRC/LRC) operation plan (OPLAN). The petroleum appendix covers theater-wide fuel requirements, resupply, and distribution. The format for fuels planning is prescribed in Joint Pub 5-03.2, "Joint Operations Planning and Execution System, Vol II (Planning and Execution Formats and Guidance)" to become CJCSI 3122.03. The DFRs and Service components support the JPO in developing a practical, sustainable petroleum support concept and plan.

- **Inland Petroleum Distribution Plan (IPDP) and Base Support Plans.** Just as the JPO is responsible for theater petroleum planning, the SAPO is responsible for petroleum, oil, and lubricants (POL) planning and execution matters within their JOA. This level of planning focuses on support for each Service component. It's products are the IPDP and base support plans. The IPDP complements the intratheater and

intertheater planning efforts of the JPO and forms the tactical basis of the petroleum portion of the command's plan for its MRC/LRC. The base support plans focus on internal, air base logistics and may or may not be appended to the IPDP. The IPDP is published either as an annex to the petroleum appendix of the OPLAN or as a stand-alone document.

- **Planning Considerations.** The petroleum supply system must be designed for the operations and climate of the specific theater. Strategic, operational, and tactical plans should consider at least the following points. (See Figure I-5.)



Figure I-5. Planning Considerations

- **Mission.** The mission and the planned size and composition of the joint forces to be supported should be guiding parameters for planning efforts.

Chapter I

- **Joint Strategic Capabilities Plan (JSCP).** Theater contingency scenarios, worldwide materiel distribution policies, and other data outlined in the JSCP and its associated supplemental instructions should be considered in determining specific theater requirements. The goal is to ensure that, prior to D-day, comprehensive petroleum support for combat operations is available.
- **Fuel Requirements.** Fuel requirements to support the deployment force are determined by the Services. Service components of the geographic combatant commanders (or other organizations within each Service) use such factors as troop strength; numbers and types of aircraft, vehicles, or ships; deployment times; and intensity and duration of engagement to determine time-phased petroleum requirements. Plans should include these Service-generated requirements, all pre-positioned stocks, and sources for resupply. **The Inventory Management Plan (IMP)**, developed annually by DFSC in coordination with the Services and combatant commands, **details worldwide bulk petroleum war reserve requirements (BPWRRs)** and storage availability by location. The BPWRRs are sized based on resupply sourcing assumptions and days-of-supply factors developed by the Joint Staff and approved by OSD.
- **Infrastructure.** The capability of installations and facilities resident in the operational area to provide fuel, storage, distribution, and laboratories can significantly enhance initial and sustained support for US forces. Size, capability, and maintenance status of offshore unloading facilities, terminals, distribution points, and bases are important to the logistic feasibility of the fuels plan. Addressing this data can help determine the need for and method of employment of tactical terminals, pipelines, hoselines, and other fuels handling equipment.
- **Equipment.** To ensure that petroleum handling and distribution equipment is available for support of operations, **fuels deployment packages and operational project stocks** (e.g., IPDS, fuels equipment on MPS and afloat pre-positioning force) **should be identified and considered for use**. In addition, each Service's operating units for the specific petroleum handling systems should be linked to those systems and identified for movement in the plan.
- **Support Units.** **Identifying the type and arrival dates of units not tied to any specific equipment system and needed for various support roles are critical to any operational success.** Timely arrival of engineer units for construction of petroleum facilities, quality surveillance personnel for running laboratories, and underwater construction teams for OPDS setup are just a few of the diverse types of support units that must be identified.
- **Interoperability of Fuel Transfer Systems.** Interoperability should be considered and resolved in the planning process for at least the following interfaces:
 - Tanker or oiler to Navy receiving ship, US Coast Guard receiving ship, seaport load and off-load facilities, and JLOTS systems.
 - Air base fuel storage and dispensing systems to receive fuel from aircraft tankers and issue fuel to Service component and coalition aircraft.

Principles of Bulk Petroleum Logistics



Refilling a R-11 refueling unit.

- Shore distribution systems to tactical fuel systems and equipment; e.g., OPDS, IPDS, AABFS, Tactical Airfield Fuel Dispensing System, and fuel tanker vehicles.
- **Sustainability and Survivability.** Both of these concepts should be factored into the plan to ensure petroleum logistic feasibility. Assumptions made should be critically reviewed. Where appropriate, security requirements beyond general user security must be identified.
- **Commercial Support.** For MOOTW, careful consideration must be given to commercial into-plane and bunker contracts that may be available to support deployment and the JOA. Many potential sources of petroleum supply will have political, technical, and economic factors that limit the availability of bulk petroleum from these sources. These commercial contracts and potential limiting factors must be taken into account when developing the plan to support the deployment, execution, and redeployment of forces.

9. Host-Nation Support

a. **General.** Geographic combatant commanders should make maximum use of host-nation capabilities to meet peacetime and wartime requirements. This is especially critical in contingencies when logistic support from US units or equipment may not be readily available or combat forces have outpaced integral logistics capability. The type and amount of fuels support provided should, if possible, be specified in signed agreements and included in logistic plans of all nations concerned. The amount of support, civil or military, a host nation can provide depends on its national laws, industrial capability, and willingness to give such support. Although sometimes difficult to obtain, HNS agreements should be aggressively pursued.

b. **Agreements.** Several different agreements may serve geographic combatant commanders' and Service components' needs depending on the degree and type of support required and the specific host nation.

Chapter I

- Negotiations can occur with the host nation under the auspices of an **Acquisition Cross-Service Agreement (ACSA)** or a **stand-alone international agreement**. An ACSA is usually negotiated by the combatant command and is authorized under the acquisition and cross-Service authorities, 10 United States Code 2341-2350. A stand-alone international agreement is usually negotiated by DFSC or a Service through the appropriate American Embassy as authorized in DOD Directive 5530.3, “International Agreements.”
- **Replacement-in-kind and fuel exchange agreements** are negotiated with foreign governments to provide fuel support in the international arena and to improve relations between the US and foreign militaries. In these agreements, products are supplied on a reciprocal basis, either with an exchange of fuel or cash payment, between the military organizations of both countries. These agreements are operational tools that enhance sustainability and readiness, because countries routinely train and support each other.
- Fuel or storage support is also provided by commercial sources within foreign countries to US military forces. These types of contractual arrangements are routinely negotiated by DFSC to provide fuel support at international air or sea ports to meet military requirements.

CHAPTER II

RESPONSIBILITIES

“...every good soldier in authority should be just as concerned with his responsibility to help those under him make the right turns.”

Major General Aubrey Newman
Follow Me

1. General

To provide a basis for understanding the doctrine in Chapter I, “Principles of Bulk Petroleum Logistics,” bulk petroleum management responsibilities currently assigned to the Department of Defense, Joint Staff, combatant commands, Defense agencies, and Services are discussed in this chapter. **Each level of authority has specific responsibilities to ensure bulk petroleum support is efficiently and effectively provided to US military forces across the range of military operations.** These responsibilities are briefly discussed below and further outlined in detail in DOD 4140.25-M, “DOD Management of Bulk Petroleum Products, Natural Gas and Coals.”

2. OSD

The **Deputy Under Secretary of Defense for Acquisition and Technology** (DUSD (A&T)) is responsible for establishing policies for management of bulk petroleum stocks and facilities and providing guidance to other DOD agencies, the Joint Staff, and Services. The **Deputy Under Secretary of Defense for Logistics** will serve as the central administrator for energy management and IMM oversight responsibility for fuel products. The **Under Secretary of Defense (Comptroller)**, in coordination with DUSD(A&T), is responsible for establishing financial policies and guidance for management of bulk petroleum products.

3. Chairman of the Joint Chiefs of Staff

The **Chairman of the Joint Chiefs of Staff** is primarily focused on wartime support and coordinates with the Department of Defense, Services, and the unified commands to resolve petroleum issues. The **Director for Logistics (J-4), Joint Staff**, is the primary agent of the Chairman of the Joint Chiefs of Staff for all bulk petroleum matters. Key responsibilities of the J-4 that influence joint petroleum principles and affect operations are listed below:

- a. Act as the focal point for joint bulk petroleum doctrine.
- b. Make recommendations to the Department of Defense on fuel wartime sourcing and pre-positioning days of supply.
- c. Prescribe combatant command procedures for reporting bulk petroleum. Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3150.14, “Joint Reporting Structure (JRS), Logistics,” details these procedures.
- d. Provide fuel inputs to the JSCP and review fuels planning in prescribed OPLANS.

4. Geographic Combatant Commanders

The geographic combatant commanders are responsible to ensure fuel support is provided to combat forces to accomplish

Chapter II

those missions assigned by the National Command Authorities. The geographic combatant commander establishes a JPO and, if needed, a SAPO to discharge petroleum

logistic responsibilities. Key responsibilities of the geographic combatant commanders that influence joint petroleum principles and affect operations are shown in Figure II-1.

KEY PETROLEUM RESPONSIBILITIES OF THE GEOGRAPHIC COMBATANT COMMANDERS

- Plan and coordinate the receipt, storage, and distribution of petroleum products in theater in coordination with the Defense Logistics Agency (DLA)
- Coordinate and prioritize petroleum military construction and qualified maintenance and repair projects and provide petroleum logistic planning and policy guidance to component commanders
- Ensure fuel requirements, operations, and constraints are addressed in the fuels annex of operation plans and operation plans in concept format with assigned time-phased force and deployment data
- Negotiate, in coordination with DLA, formal host-nation support and coordinate the development and release of alliance or coalition petroleum planning information
- Release or reallocate theater war reserves in an emergency
- May assume temporary operational control of DLA elements overseas in a major emergency in accordance with a coordinated memorandum of understanding
- Make maximum use of available stocks in adjacent theaters to support regional contingencies
- Direct tactical movement of fuels by means available to any Service component in a theater of operations
- Plan and coordinate the use of captured or abandoned enemy bulk fuel assets

Figure II-1. Key Petroleum Responsibilities of the Geographic Combatant Commanders

	Responsibilities
5. Commander in Chief, US Transportation Command (USCINCTRANS)	<p>The bulk petroleum mission of USCINCTRANS is to plan for and provide air, land, and sea transportation of fuels for the Department of Defense across the range of military operations. These efforts will supplement and not replace the primary responsibilities assigned to the Services and DLA, especially with regard to intratheater and inland fuel movement and distribution. USCINCTRANS is not required to have a JPO.</p> <p>6. Defense Logistics Agency and Defense Fuel Supply Center</p> <p>The Director, DLA, is responsible for meeting the petroleum support requirements of the combatant commands and Services. These functional responsibilities have been delegated to the Commander, DFSC, and include procurement, ownership, quality surveillance, accountability, budgeting, and distribution of bulk petroleum stocks to the point-of-sale. Key functions of the DFSC that influence joint petroleum principles and affect operations are as follows:</p> <ul style="list-style-type: none"> a. Plan, program, budget, and fund facility maintenance and repair and construction of new fuel facilities. b. Design and execute maintenance, repair, construction, and eligible environmental remediation projects in coordination with the Services and combatant commands.
	<ul style="list-style-type: none"> c. Plan, program, budget, and fund for contract storage and associated services for bulk petroleum support. d. Negotiate and conclude international agreements in conjunction with the geographic combatant commanders to provide bulk petroleum support overseas. e. Develop contingency support plans in concert with the supported commander to acquire the necessary petroleum products, storage, and services. f. Provide technical support involving military specifications. g. Allocate resources in support of WRMS, compute POS requirements, and develop an IMP that identifies inventory levels, storage, and covered requirements. h. Develop the annual quantity of bulk petroleum war reserves requested for funding in any fiscal year. i. Continuously evaluate the petroleum market and advise OSD, the Joint Staff, and the Services of resupply issues critical to peacetime and wartime operations and planning. j. Acquire, in a contingency situation, the necessary petroleum product, storage, and/or services to support military requirements. <p>7. Services</p> <p>To perform the petroleum support mission, each Service is responsible for the items shown in Figure II-2.</p>



Figure II-2. Petroleum Responsibilities of the Services

8. Service-Specific Responsibilities

a. **Army.** The Army shall provide management of overland petroleum support, including inland waterways, to US land-based forces of all the DOD components. To ensure wartime support, the Army shall fund and maintain tactical storage and distribution systems to supplement existing fixed facilities. The Army shall be responsible for inland distribution during wartime to include providing the necessary force structure to construct, operate, and maintain inland petroleum distribution systems. In an undeveloped theater, this also includes providing a system that transports bulk petroleum inland from the high-water mark of the designated ocean beach.

b. **Air Force.** The Air Force shall provide distribution of bulk petroleum products by air within a theater where immediate support is needed at remote locations. It shall maintain the capability to provide tactical support to Air Force units at improved and austere locations.

c. **Navy.** The Navy shall provide seaward and over-water bulk petroleum shipments to the high-water mark for US sea and land-based forces of all DOD components. It shall maintain the capability to provide bulk petroleum support to the Navy's afloat and ashore forces.

d. **Marine Corps.** The Marine Corps shall maintain a capability to provide bulk petroleum support to Marine Corps units.

Responsibilities



Joint forces secure fuel line fittings at a Fuel System Supply Point in Saudi Arabia during Operation DESERT SHIELD / STORM .

Chapter II

Intentionally Blank

CHAPTER III

PETROLEUM STOCKAGE MANAGEMENT

"[Fuel, replacements, spare parts, etc.]...must be asked for in time by the front line, and the need for them must be anticipated in the rear."

General George S. Patton

1. General

DOD bulk petroleum inventories consist of WRMS and POS. These two categories of inventory guide sizing of the stock levels to supply fuel to permit immediate and short-term operations across the range of military operations. Their purpose is to sustain such operations until resupply can occur. The overall intent is to maintain minimal inventories of specific products at each location to safely support operational requirements.

properly size petroleum war reserve stocks.

The BPWRR is based on the need to support specific joint operations until normal lines of communications are established. The Joint Staff develops guidelines, approved by OSD, on days of supply and appropriate assumptions on secure sources of resupply. These guidelines are provided to the Services and combatant commanders and serve as the basis for determining requirements. Using these guidelines, the Services develop and apply structured, auditable methods of computing BPWRR for each OPLAN.

2. War Reserve Requirements and Stocks

a. Bulk Petroleum War Reserve Requirements. To ensure the supply of petroleum products in the initial phases of a contingency, the combatant commands and the Services develop requirements to

b. Bulk Petroleum War Reserve Stocks (BPWRS). The BPWRS is the on-hand product designated to satisfy the BPWRR. This stockage is in addition to the POS for each location. Combatant commanders are authorized to release or reallocate BPWRS in emergency situations.



Fuel System Supply Point in the Saudi Arabian desert,
Operation DESERT SHIELD / STORM.

Chapter III

c. Stockage Locations. The location, level of protection, and security of BPWRS are prescribed by the combatant commanders with recommendations from the responsible Service component. To the extent practicable, and consistent with acceptable risk, stocks are positioned at or near the point of intended use. When possible, stocks are dispersed and held in conventional hardened facilities in high-threat areas. DLA plans for war reserve storage are coordinated with the geographic combatant commanders and fully consistent with HNS programs such as the North Atlantic Treaty Organization's infrastructure programs, the Combined Defense Improvement Project in Korea and the Japanese Facilities Improvement Project.

3. Primary Operating Stocks

The fuel POS are the amount of product required to sustain peacetime operations in support of military demands. The fuel POS levels are computed annually by DFSC for all DFSPs and factors depicted in Figure III-1.

4. Inventory Management Plan

A worldwide IMP is developed and issued annually by DFSC in coordination with the Services and combatant commands. The IMP identifies the required inventory levels, both POS and BPWRR, and the amount of fuel by location that is stocked to cover those requirements. Because of storage limitations, products can be stocked by one combatant commander to cover another

FACTORS FOR COMPUTING THE PRIMARY OPERATING STOCKS

- ✓ Daily Demand Rate—The past and projected years issues are used to calculate a daily demand rate because a specific amount of days of supply is authorized for storage
- ✓ Economic Resupply Quantity—The economic resupply quantity represents the amount of fuel delivered in increments at the most optimum transportation mode. Factors considered include usable storage capacity, volume rates, depth of waterway, maximum vessel capacity, and minimum tender acceptable
- ✓ Unobtainable Inventory—That fuel needed to prime a storage and dispensing system such as pipeline fill, manifold fill, and tank bottoms below the suction line
- ✓ Safety Level—The safety level is the amount of fuel to compensate for variability in resupply time and demand during the resupply cycle

Figure III-1. Factors for Computing the Primary Operating Stocks

Petroleum Stockage Management

combatant commander's OPLAN. Although not desirable, this is allowed when products can be delivered within the required OPLAN timeframe and before normal commercial resupply is planned.

5. Emergency Allocation of Petroleum

There are various levels of responsibility that govern the allocation of fuel during a national emergency. These responsibilities are dependent on the theater and worldwide commercial environment.

a. **Theater.** Within a geographic combatant commander's AOR, the JPO will direct the allocation of petroleum products as needed. This includes using BPWRS to meet peacetime operations. Actions taken will be coordinated with DFSC and the Services. DFSC is responsible for providing the combatant commander with the needed information on the overall fuel situation and efforts under way to overcome deficiencies.

b. **Worldwide.** If the Services or the combatant commanders are not satisfied with the allocation of products by DFSC during constrained fuel availability, they may request the activation of the Joint Materiel Priorities and Allocation Board (JMPAB). The JMPAB will act for the Chairman of the Joint Chiefs of Staff in all petroleum allocation matters. Establishment of the JMPAB to allocate fuel is made only under extreme situations where there are worldwide fuel shortages that will result in ultimate supply failure or in unacceptable degradation of wartime sustainability. Specific information that the Service or combatant commanders must provide to the JMPAB includes current inventory, resupply forecast, and impact on both peacetime and wartime operations.

6. CJCS Petroleum Reporting Requirements

There are two key joint petroleum reports that are submitted annually or more frequently at the direction of the Chairman of the Joint Chiefs of Staff. These two reports, called the Bulk Petroleum Contingency Report (REPOL) and Bulk Petroleum Capabilities Report (POLCAP) are submitted by the geographic combatant commanders' JPOs. Information on how to complete these reports is outlined in CJCSI 3150.14, "Joint Reporting Structure (JRS), Logistics."

a. The REPOL provides the Joint Staff, Services, and DFSC with summary information on bulk petroleum inventories, damage to and damage assessment for bulk petroleum distribution systems, and other strategic information pertaining to bulk petroleum support posture. During contingencies, a REPOL can be submitted as frequently as daily.

b. The POLCAP provides the Joint Staff, Services, and DFSC with an assessment of bulk petroleum support capabilities for contingency requirements in a specific theater.

7. Bulk Petroleum Storage Facilities Report

The bulk petroleum storage facilities report documents tankage data and receiving/shipping capability. The information is forwarded by the DOD components to the DFSC for compilation. This report documents bulk storage facilities of 500 barrels or more capacity, or banks of manifolds, fixed tanks that collectively have a total capacity of 500 barrels or more for a single product. This report provides a data base for analyzing worldwide storage capabilities.

Chapter III

FUEL DISTRIBUTION: THE "PATTON SOLUTION"

General George S. Patton probably never met a supply officer he liked. He avoided his Third Army's chief of logistics until the very last week of the war, never conferring with him during the nine fuel-problem-plagued months when Patton's armor roared across Europe and kept running short of gasoline. Patton abhorred the mundane details of supply. He demanded as much fuel as possible and cared not where it came from or how. Fighting was his job. Others were left to cope with logistical matters, although Patton sometimes devised extraordinary means to keep his armor rolling.

The Third Army established a deserved reputation for unusual and even unorthodox acquisition of supplies, as one observer reports:

"Roving foraging parties impersonated members of other units, trains and convoys were diverted or highjacked, transportation companies were robbed of fuel they needed for the return journey, and spotter planes were sent hundreds of miles to the rear in order to discover fuel supplies."

In September, Patton's forces, despite their tendency for acquiring fuel at any cost, finally ran out of gasoline after a historic dash eastward across France. So did other Allied armies converging on Germany from the west. Fuel and transportation facilities were still limited, and the Allied advance ground to a halt. The stalled front stretched in an arc from Antwerp to the Moselle valley near the French-Swiss border. Fuel had to move up to 300 miles from the Normandy ports. Antwerp had just been taken and would not be ready as a full-capacity terminal until late November. With the benefit of hindsight, it seems apparent that the fuel crisis might have been averted and the war ended several months earlier had the Allies stuck to their original plan of capturing the excellent ports on the southern coast of Brittany on the Bay of Biscay. Not only were off-loading facilities available for the biggest tankers, but the railroads afforded direct transport to Paris and on into Germany. Instead of securing the logistical bases on Quiberon Bay and the ports of Lorient and Saint-Nazaire, US strength was concentrated on a direct path from Normandy along the Channel coast and toward Paris.

Patton and the Third Army arguably had the best shot at spearheading the drive into Germany. The Wehrmacht fought valiantly in all sectors, but it was reeling from lack of supplies and attrition. German troops facing Patton were

Petroleum Stockage Management

among the weakest on the western front, and the Wehrmacht's inability to move units into pressure points would have made it difficult for the Germans to ever stop the colorful general. Once the Third Army broke out of the Normandy bridge head, Patton was certain he could cross the Rhine by October if adequately supplied.

To read the daily reports of the Third Army is to appreciate the urgency of Patton's fuel situation in September 1944 when his gasoline rations had been cut and a large number of his supply trucks had been diverted to other units. Entries included pleas for emergency shipments as his fuel stocks dwindled to a half-day supply. When his tanks and other armor finally ran dry, the Third Army was across the Moselle, and the Rhine was within reach. From then on until the end of October, Patton's forces averaged less than a two-day supply of gasoline. The army's infantry divisions were rationed to 5,000 gallons a day. Armored divisions received 25,000 gallons initially, but the allocation was halved in October. Even these reduced rations were possible only because four-engine bombers from England were diverted from regular missions to ferry filled jerry cans to Patton. Other units also received airlifted fuel, but the total never exceeded 60,000 gallons a day for the entire theater.

Patton was partly right in believing the share-alike short ages were not equally applied. The First Army, for one, received greater allocations than the Third. Its fuel reserves backed up to a two-day reserve. Possibly, Patton's tank crews may have been less conservation minded than those in the First Army, and heavier consumption would have resulted in slower stockpiling. The records on this are not clear, though there is little doubt all Allied forces were frustratingly slowed because no one had enough fuel.

Reviews of what caused the basic fuel shortage of the Allies agree there was a combination of factors. Allied armies moved faster and farther than anticipated. Facilities for offloading tankers and for storing fuel in accessible areas were lacking or insufficient. Finally, there were problems of distribution, and they were greater in proportion to the distance between the Channel coast and the front. There was always enough fuel somewhere, but not always enough in the right place.

SOURCE: Goralski, Robert and Freeburg, Russell W., *Oil and War*, William Morrow and Company, 1987.

Chapter III

Intentionally Blank

APPENDIX A

REFERENCES

1. DOD Directive 3110.6, "War Reserve Materiel Policy."
2. DOD Directive 4140.25, "DOD Bulk Petroleum Management Policy."
3. DOD Manual 4140.25-M, "DOD Management of Bulk Petroleum Products, Natural Gas and Coal."
4. DOD Directive 5530.3, "International Agreements."
5. Joint Pub 1-02, "DOD Dictionary of Military and Associated Terms."
6. Joint Pub 4-0, "Doctrine for Logistic Support of Joint Operations."
7. JP 5-03.2, "Joint Operations Planning and Execution System, Volume II (Planning & Execution Formats and Guidance)." To become CJCSI 3122.03.
8. CJCSI 3110.01, "Joint Strategic Capabilities Plan FY96."
9. CJCSI 3150.14, "Joint Reporting Structure (JRS), Logistics."

Appendix A

Intentionally Blank

APPENDIX B ADMINISTRATIVE INSTRUCTIONS

1. User Comments

Users in the field are highly encouraged to submit comments on this publication to the Joint Warfighting Center, Attn: Doctrine Division, Fenwick Road, Bldg 96, Fort Monroe, VA 23651-5000. These comments should address content (accuracy, usefulness, consistency, and organization), writing, and appearance.

2. Authorship

The lead agent and Joint Staff doctrine sponsor for this publication is the J-4, Director for Logistics.

3. Change Recommendations

- a. Recommendations for urgent changes to this publication should be submitted:

TO: JOINT STAFF WASHINGTON DC//J4/J7/JDD//
INFO: SECDEF WASHINGTON DC//ASD(PA):DPL//

Routine changes should be submitted to the Director for Operational Plans and Interoperability (J-7), JDD, 7000 Joint Staff Pentagon, Washington, D.C. 20318-7000.

- b. When a Joint Staff directorate submits a proposal to the Chairman of the Joint Chiefs of Staff that would change source document information reflected in this publication, that directorate will include a proposed change to this publication as an enclosure to its proposal. The Military Services and other organizations are requested to notify the Director, J-7, Joint Staff, when changes to source documents reflected in this publication are initiated.

- c. Record of Changes

CHANGE NUMBER	COPY NUMBER	DATE OF CHANGE	DATE ENTERED	POSTED BY	REMARKS

Appendix B

4. Distribution

- a. Additional copies of this publication can be obtained through Service publication centers.
- b. Only approved pubs and test pubs are releasable outside the combatant commands, Services, and Joint Staff. Release of any joint publication to foreign governments or foreign nationals must be requested through the local embassy (Defense Attaché Office) to DIA Foreign Liaison Branch, C-AS1, Room 1A674, Pentagon, Washington D.C. 20301-7400.
- c. Additional copies should be obtained from the Military Service assigned administrative support responsibility by DOD Directive 5100.3, 1 November 1988, "Support of the Headquarters of Unified, Specified, and Subordinate Joint Commands."

By Military Services:

Army: US Army AG Publication Center
2800 Eastern Boulevard
Baltimore, MD 21220-2898

Air Force: Air Force Publications Distribution Center
2800 Eastern Boulevard
Baltimore, MD 21220-2896

Navy: CO, Navy Aviation Supply Office
Distribution Division (Code 03443)
5801 Tabor Avenue
Philadelphia, PA 19120-5000

Marine Corps: Marine Corps Logistics Base
Albany, GA 31704-5000

Coast Guard: Coast Guard Headquarters, COMDT (G-REP)
2100 2nd Street, SW
Washington, D.C. 20593-0001

- d. Local reproduction is authorized and access to unclassified publications is unrestricted. However, access to and reproduction authorization for classified joint publications must be in accordance with DOD Regulation 5200.1-R.

GLOSSARY

PART I—ABBREVIATIONS AND ACRONYMS

AABFS	amphibious assault bulk fuel system (Marine Corps)
ACSA	acquisition cross-Service agreement
AO	area of operations
AOR	area of responsibility
BPWRR	bulk petroleum war reserve requirement
BPWRS	bulk petroleum war reserve stocks
CJCSI	Chairman of the Joint Chiefs of Staff Instruction
DFR	Defense Fuel Region
DFSC	Defense Fuel Supply Center
DLA	Defense Logistics Agency
DOD	Department of Defense
HEMTT	heavy expanded mobile tactical truck
HNS	host-nation support
IMM	integrated materiel management
IMP	inventory management plan
IPDS	Inland Petroleum Distribution System (Army)
IPDP	inland petroleum distribution plan
J-4	Joint Staff Logistics Directorate
JLOTS	joint logistics over-the-shore
JMPAB	Joint Materiel Priorities and Allocation Board
JOA	joint operations area
JPO	Joint Petroleum Office
JSCP	Joint Strategic Capabilities Plan
MOOTW	military operations other than war
MPS	marine prepositioning ships
MRC/LRC	major regional contingency/lesser regional contingency
OPLAN	operation plan
OPDS	offshore petroleum discharge system (Navy)
OSD	Office of the Secretary of Defense
POL	petroleum, oils, and lubricants
POLCAP	bulk petroleum capabilities report
POS	primary operating stocks
REPOL	petroleum damage and deficiency report; reporting emergency petroleum, oils, and lubricants

Glossary

SAPO	subarea petroleum office
USCINCTRANS USD(A&T)	Commander in Chief, US Transportation Command Under Secretary of Defense for Acquisition & Technology
WRMS	war reserve materiel stocks

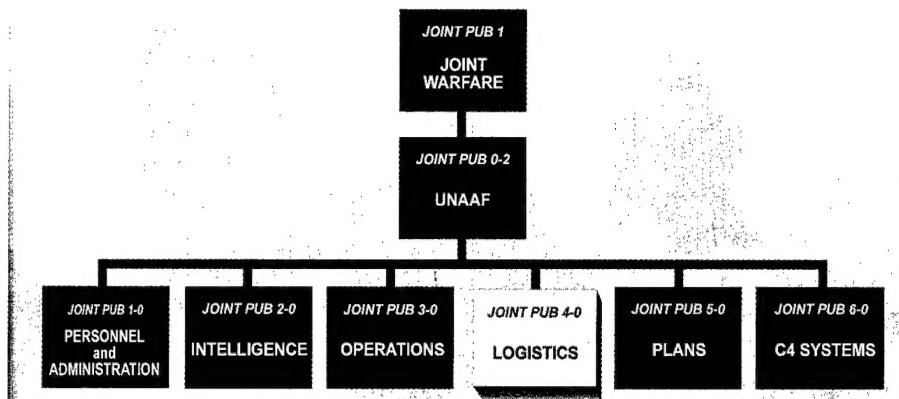
PART II—TERMS AND DEFINITIONS

bulk petroleum product. A liquid petroleum product transported by various means and stored in tanks or containers having an individual fill capacity greater than 250 liters. (Joint Pub 1-02)	to support day-to-day operational requirements, and which, in part, can also be used to offset sustaining requirements. Also called POS. (Joint Pub 1-02)
petroleum, oils and lubricants. A broad term which includes all petroleum and associated products used by the Armed Forces. Also called POL. (Joint Pub 1-02)	slated items. Bulk petroleum and packaged bulk petroleum items that are requisitioned for overseas use by means of a consolidated requirement document, prepared and submitted through joint petroleum office channels. Packaged petroleum items are requisitioned in accordance with normal requisitioning procedures. (Joint Pub 1-02)
primary operating stocks. Logistics resources on hand or on order necessary	

Glossary

Intentionally Blank

JOINT DOCTRINE PUBLICATIONS HIERARCHY



All joint doctrine and tactics, techniques, and procedures are organized into a comprehensive hierarchy, as shown in the chart above. Joint Pub 4-03 is in the Logistics series of joint doctrine publications. The diagram below illustrates an overview of the development process:

